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DEPARTMENT OF LABOR

MINE SAFETY AND HEALTH ADMINISTRATION

30 CFR Part 75

[Docket No. MSHA-2014-0019]

RIN 1219-AB78

**Proximity Detection Systems for Mobile Machines in
Underground Mines**

AGENCY: Mine Safety and Health Administration, Labor.

ACTION: Proposed rule.

SUMMARY: The Mine Safety and Health Administration (MSHA) is proposing to require underground coal mine operators to equip coal hauling machines and scoops with proximity detection systems. Miners working near these machines face pinning, crushing, and striking hazards that result in accidents involving life threatening injuries and death. The proposal would strengthen protections for miners by reducing the potential for pinning, crushing, or striking accidents in underground coal mines. MSHA is also interested in the application of these proposed requirements to underground metal and nonmetal mines.

DATES: Comments must be received or postmarked by midnight Eastern Daylight Saving Time on [INSERT DATE 90 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Submit comments and informational materials, identified by RIN 1219-AB78 or Docket No. MSHA-2014-0019, by one of the following methods:

- *Federal e-Rulemaking Portal:*
<http://www.regulations.gov>. Follow the instructions for submitting comments.
- *E-mail:* zzMSHA-comments@dol.gov.
- *Fax:* 202-693-9441.
- *Mail:* MSHA, Office of Standards, Regulations, and Variances, 201 12th Street South, Suite 4E401, Arlington, Virginia 22209-3939.
- *Hand Delivery/Courier:* MSHA, 201 12th Street South, Suite 4E401, Arlington, Virginia, between 9:00 a.m. and 5:00 p.m. Monday through Friday, except Federal holidays. Sign in at the receptionist's desk on the 4th floor.

Instructions: All submissions must include MSHA and RIN 1219-AB78 or Docket No. MSHA-2014-0019. Do not include personal information that you do not want publicly disclosed; MSHA will post all comments without change to

<http://www.regulations.gov> and <http://www.msha.gov/currentcomments.asp>, including any personal information provided.

Docket: For access to the docket to read comments received, go to <http://www.regulations.gov> or <http://www.msha.gov/currentcomments.asp>. To read background documents, go to <http://www.regulations.gov>. Review the docket in person at MSHA, Office of Standards, Regulations, and Variances, 201 12th Street South, Suite 4E401, Arlington, Virginia, between 9:00 a.m. and 5:00 p.m. Monday through Friday, except Federal Holidays. Sign in at the receptionist's desk on the 4th floor.

Information Collection Supporting Statement: MSHA posts Information Collection Supporting Statements on <http://www.regulations.gov> and on MSHA's website at <http://www.msha.gov/regs/fedreg/informationcollection/informationcollection.asp>. A copy of the information collection package is also available from the Department of Labor by request to Michel Smyth at smyth.michel@dol.gov (e-mail) or 202-693-4129 (voice).

Preliminary Regulatory Economic Analysis (PREA): MSHA will post the PREA on <http://www.regulations.gov> and on MSHA's website at <http://www.msha.gov/rea.htm>.

E-Mail Notification: To subscribe to receive an e-mail notification when MSHA publishes rules, program information, instructions, or policy, in the *Federal Register*, go to <http://www.msha.gov/subscriptions/subscribe.aspx>.

FOR FURTHER INFORMATION CONTACT: Sheila McConnell, Acting Director, Office of Standards, Regulations, and Variances, MSHA, at mcconnell.sheila.a@dol.gov (e-mail), 202-693-9440 (voice), or 202-693-9441 (facsimile).

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I. Introduction

The proposed rule would require underground coal mine operators to equip coal hauling machines and scoops on working sections, except longwall working sections, with proximity detection systems according to a phase-in schedule for newly manufactured and existing equipment. The proposed requirements would strengthen protections for miners by reducing the potential for pinning, crushing, or striking injuries to miners who work near these machines. MSHA is also interested in the application of these proposed requirements to underground metal and nonmetal mines.

Proximity detection systems consist of machine-mounted components and, if applicable, miner-wearable components. For proximity detection systems with miner-wearable

components, the mine operator would be required to provide a miner-wearable component to be worn by each miner on the working section. The proposed rule would establish performance and maintenance requirements for proximity detection systems and would require training for persons performing the installation and maintenance.

A. Regulatory Authority

This proposed rule is issued under section 101 of the Federal Mine Safety and Health Act of 1977 (Mine Act), as amended.

B. Background

Proximity detection is a technology that uses electronic sensors to detect motion or the location of one object relative to another. Proximity detection systems provide a warning and stop mobile machines before a pinning, crushing, or striking accident occurs that could result in injury or death to miners.

Traditionally, coal hauling machines (shuttle cars, ram cars, and continuous haulage systems) are self-propelled equipment used to transport coal from the working face to a point where the coal is loaded into mine cars or onto a conveyor for transfer to the surface. Scoops are self-propelled general utility vehicles for cleanup of loose coal or debris and moving equipment or supplies. MSHA has

evaluated all accident reports involving coal hauling machines and scoops between 1984 and 2014. MSHA has determined that a proximity detection system could have prevented 42 fatalities and 179 injuries resulting from these accidents that occurred on the working section.

In 1998, MSHA evaluated accidents involving remote controlled mining machines and determined that proximity detection systems have the potential to prevent accidents that occur when the machine operator or another miner gets too close to the machine (Dransite, 1998). MSHA noted that if changes in work practices or machine design do not prevent miners from being placed in unsafe locations, the Agency should consider a requirement for proximity detection with automatic machine shutdown. No MSHA-approved proximity detection systems were commercially available for use in underground mines at that time.

In 2002, following a series of fatal pinning, crushing, and striking accidents, MSHA decided to work with the coal mining industry to develop a proximity detection system for use on underground continuous mining machines. Since that time, manufacturers adapted proximity detection for use on other mobile machines. MSHA evaluated several systems and conducted field testing.

In 2010, MSHA introduced an initiative titled "Safety Practices around Shuttle Cars and Scoops in Underground Coal Mines." MSHA initiated this safety campaign to raise the mining industry's awareness of pinning, crushing, or striking hazards associated with mobile mining machines. This initiative included training programs and best practices to encourage mine operators to train underground coal miners to exercise caution when working around mobile machines. Information regarding this initiative is available at:

<http://www.msha.gov/focuson/watchout/watchout.asp>. Even so, 41 pinning, crushing, or striking accidents involving coal hauling machines and scoops have occurred since 2010: 23 that involved coal hauling machines and 18 that involved scoops. Three fatalities occurred in 2013, one involving a scoop and two involving coal hauling machines; and one fatality occurred in 2014 involving a scoop. MSHA determined that proximity detection systems could have prevented these accidents (since these miners were located in a proximity detection system warning/stopping zone).

The Agency published a Request for Information (RFI) on proximity detection systems in the *Federal Register* on February 1, 2010 (75 FR 5009). The comment period closed on April 2, 2010. MSHA received comments from mining

associations; mining companies; manufacturers; and state, federal, and international governments.

Comments received in response to the RFI addressed specific questions regarding function, application, training, costs, and benefits of proximity detection systems to reduce the risk of accidents. Some commenters stated that proximity detection systems are beneficial and can prevent pinning, crushing, and striking accidents. Commenters stated that conditions in the mining environment, including blocked visibility and limited space, or simply the lack of sight due to limited light, can cause an accident and that the only way to address these hazards is to equip mining vehicles with a proximity detection system. A commenter stated that, when it comes to safety, engineering barriers are sometimes required when the behavior of everyone, whether due to the lack of training or taking shortcuts, cannot be relied on. Several commenters stated that the technology needs further development and testing.

RFI comments related to specific provisions of the proposed rule are addressed in the section-by-section analysis later in this preamble.

In April 2010, MSHA observed the use of proximity detection systems in three underground mines in the Republic

of South Africa (South Africa), demonstrating successful use of this technology. One of the mines visited began testing a proximity detection system in 2008 and, at the time of the MSHA visit, had equipped the mobile machines with the system on three sections in an underground coal mine. This mine used the proximity detection system on remote controlled continuous mining machines, shuttle cars, roof bolting machines, feeder breakers, and scoops.

One system observed in South Africa, not used in the United States, used multiple technologies: very low frequency (VLF) electromagnetic technology in combination with ultra-high frequency (UHF) radio frequency identification (RFID) and a 2.4 gigahertz (GHz) radar system. The VLF electromagnetic system provided great accuracy at close distances for slower moving machines. The UHF RFID system provided greater range for faster moving machines. The radar system provided an object detection system, which communicated with the other two systems to validate potential danger.

There are four proximity detection systems approved under existing regulations for permissibility in 30 CFR part 18. These approvals are intended to ensure that the systems will not introduce an ignition hazard when operated in potentially explosive atmospheres. MSHA's approval

regulations under 30 CFR part 18 do not address how systems will perform in reducing pinning, crushing, or striking hazards. Two of these systems have been installed on coal hauling machines and scoops.

The four MSHA-approved proximity detection systems operate using electromagnetic technology and require a miner to wear a component. A microprocessor sends a signal to activate a warning signal or stop machine movement when a miner wearing the component is within a distance pre-set for the machine and mine conditions.

In September 2011, MSHA observed two coal hauling machines equipped with an MSHA-approved proximity detection system being used in an underground coal mine in the United States. MSHA observed the systems provide appropriate activation of warning signals and stop the coal hauling machines. MSHA also observed the coal hauling machines and continuous mining machines equipped with proximity detection systems function properly to protect miners equipped with miner-wearable components.

In June 2013, MSHA observed an MSHA-approved proximity detection system on a coal hauling machine and on a scoop at an underground coal mine in the United States. MSHA observed the system activate a warning signal and stop the machines as designed.

MSHA monitors the installation and development of proximity detection systems to maintain up-to-date information on the number and capabilities of systems in use. MSHA estimates that, as of January 2015, there were 583 machines in underground coal mines in the United States equipped with proximity detection systems. Equipped machines include continuous mining machines, scoops, coal hauling machines, a loading machine, a feeder breaker, and a roof bolting machine. MSHA accident data supports a proposed rule that applies to coal hauling machines (shuttle cars, ram cars, and continuous haulage systems) and scoops. At this time, MSHA does not have accident data that justifies applying the proposed requirements to other mobile machines on the working section, such as roof bolting machines.

MSHA published a final rule on Proximity Detection Systems for Continuous Mining Machines in Underground Coal Mines on January 15, 2015 (80 FR 2188). The final rule addressed equipping continuous mining machines with proximity detection systems, phased in over 8 to 36 months, and is separate from this rulemaking.

MSHA developed this proposed rule on proximity detection systems for mobile machines in underground mines to be comparable to the requirements for proximity detection

systems on continuous mining machines. MSHA intends that this proposed rule would take advantage of existing proven technology, to minimize the burden on mine operators, and allow for advances in proximity detection technology.

Additional information on proximity detection systems and technology is available on the NIOSH's Web Page at

<http://www.cdc.gov/niosh/mining/topics/ProximityDetection.html>.

MSHA solicits information and data on the advantages and disadvantages of applying proximity detection systems on mobile machines in underground metal and nonmetal mines.

II. Section-by-Section Analysis

A. § 75.1733(a) Machines Covered

Proposed § 75.1733(a) would require underground coal mine operators to equip coal hauling machines and scoops on working sections, except longwall working sections, with the machine-mounted components of a proximity detection system in accordance with the proposed phase-in schedule. At this time, all MSHA-approved proximity detection systems include a miner-wearable component. Together, the machine-mounted components and any miner-wearable components make up the proximity detection system. This proposed rule would also accommodate possible future technologies that may not require a miner-wearable component.

For MSHA-approved proximity detection systems with miner-wearable components, the proposed rule would require the mine operator to provide a miner-wearable component to be worn by each miner on the working section, except longwall working sections. The proposal would apply to coal hauling machines and scoops on working sections using continuous mining machines, including full-face continuous mining machines, or using conventional mining methods. The proposal would apply to production and maintenance shifts.

A commenter, in response to the RFI, stated that MSHA's approval process does not include an evaluation of the systems' functional readiness to perform in the underground mine environment. This commenter indicated that only a handful of mines have operational experience with approved systems and that a thorough examination of the operational readiness of these systems must be undertaken to address safety issues before they are required. Several other commenters stated that proximity detection systems have not proven reliable and that more testing is needed.

A representative of a South African mining company that uses a proximity detection system on continuous mining machines, shuttle cars, scoops, roof bolting machines, and feeder breakers, stated in comments to the RFI that the system is reliable. This South African mining company

reported that it did not have a single reliability problem over a period of 18 months.

A proximity detection system manufacturer stated that its proximity detection system is installed on many types of underground mobile machines in Canada and Australia and that there has not been a serious injury or fatality reported on any machine using its proximity detection system. Another commenter stated that applying proximity detection systems to all mobile machines should be a long-term goal that could provide safety benefits.

Coal hauling machines include shuttle cars, diesel- and battery-powered ram cars, and continuous haulage systems. Scoops in underground coal mines include both diesel-powered and electrical-powered scoops. Mobile machines travel through narrow entryways at faster speeds than continuous mining machines. Miners work and travel in the same narrow entryways and the on-board machine operators have limited visibility of the area around the machine. Coal hauling machines also travel through ventilation curtains where they can encounter miners without warning. Continuous haulage systems include mobile bridge conveyors or carriers and flexible conveyor trains. Continuous haulage systems consist of two or more mobile units. When a continuous haulage system is used to transport coal to the conveyor,

MSHA considers the working section to be all areas of the mine from the loading point to and including the working faces. These machines are long and extend beyond the visual range of the machine operator. Miners on working sections using continuous haulage systems can be near the systems without the machine operators' knowledge and can be pinned, crushed, or struck.

MSHA has determined that miners are exposed to pinning, crushing, and striking hazards when working near these machines in underground coal mines, and that working near these machines on the working section has resulted in a significant number of injuries and fatalities. A proximity detection system could have prevented 42 pinning, crushing, or striking fatalities on these machines from 1984 through 2014 (since the miners were located in a proximity detection system warning/stopping zone), which occurred on working sections: 31 associated with coal hauling machines and 11 associated with scoops. (See Table 1.) Use of proximity detection systems could have prevented these accidents by stopping machine movement before miners were pinned, crushed, or struck by the machine.

Table 1: Number of Underground Coal Mine Preventable Injuries/Fatalities on the Working Section (1984-2014) by Machine Type

Machine Type	Injuries	Fatalities
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Coal Hauling Machines	123	31
Scoops	56	11
Total	179	42

Note: Of these 42 fatalities, nine occurred from 2010 through 2014. Four of those fatalities occurred in 2013 and 2014: two involving coal hauling machines and two involving scoops.

MSHA would consider alternative technologies that might provide protection from pinning, crushing, or striking hazards at least equivalent to that provided by proximity detection systems. MSHA requests that commenters include specific information on alternatives, rationale for suggested alternatives, safety benefits to miners, costs of implementation, technological and economic feasibility considerations, and supporting data.

1. Exceptions

The proposal would exclude longwall working sections. In MSHA's experience, coal hauling machines and scoops are not routinely used on longwall working sections. The working section includes all areas of the coal mine from the loading point of the section to and including the working faces.

MSHA solicits information and data addressing whether scoops or coal haulage machines cause a hazard to miners on longwall working sections such that they may require the use

of proximity detection. MSHA requests that commenters include specific information on rationale for not excluding longwall working sections, safety benefits to miners, costs of implementation, technological and economic feasibility considerations, and supporting data.

MSHA is aware that some machines operate both on and off the working section and that some machines are only used off the working section. The proposal would require mine operators to equip only coal hauling machines and scoops used on the working section with the machine-mounted components of a proximity detection system. From 1984 through 2014, however, two fatal accidents involving scoops occurred off working sections. MSHA is not aware of a fatal accident involving a coal hauling machine traveling off a working section. In addition, 13 nonfatal accidents occurred off working sections (two involving coal hauling machines and 11 involving scoops) and 16 occurred in an unknown location (one involving a coal hauling machine and 15 involving scoops).

MSHA solicits comments on whether the proposed requirements should apply to any mobile machines, other than coal hauling machines and scoops, in use on or off the working section. MSHA also solicits comments on whether the proposed requirements should apply to coal hauling machines

and scoops in use off the working section. MSHA requests that commenters include specific information on their rationale, safety benefits to miners, costs of implementation, technological and economic feasibility considerations, and supporting data.

2. MSHA-Approved Proximity Detection Systems

The three methods to obtain MSHA approval to add the machine-mounted components of a proximity detection system to a machine are as follows:

(1) A machine manufacturer can apply for a Revised Approval Modification Program (RAMP) approval.

(2) A mine operator can apply to the Approval and Certification Center (A&CC) for a field modification.

(3) A mine operator can notify the MSHA district manager through a district field change application for electric machines.

MSHA offers an optional Proximity Detection Acceptance (PDA) program which allows a proximity detection system manufacturer to obtain MSHA acceptance for a proximity detection system. This acceptance states that the proximity detection system has been evaluated under 30 CFR part 18 and is suitable for incorporation on an MSHA-approved machine. It permits the manufacturer or owner of a machine to add the proximity detection system to a machine by requesting MSHA

to add the acceptance number (PDA Number) to the machine approval under one of three methods listed above.

MSHA has approved four proximity detection systems under existing regulations for permissibility in 30 CFR part 18 for use on continuous mining machines. Two of these approved systems have been installed on coal hauling machines or scoops.

As of January 2015, there were 79 coal hauling machines and 50 scoops equipped with a proximity detection system in use in underground coal mines in the United States. Proximity detection was adapted for use on coal hauling machines and scoops by adjusting the field generator configuration to create appropriately sized zones and by changing the method for stopping machine movement. For example, a proximity detection system may be configured, as needed, to de-energize the pump motor to stop continuous haulage machine movement while a system installed on a shuttle car may be configured to apply brakes.

MSHA is aware that a manufacturer has installed machine-mounted components on a continuous haulage system and that the manufacturer has demonstrated its performance to a mine operator. MSHA has not observed the operation of a proximity detection system installed on a continuous haulage system in an underground mine. MSHA anticipates

challenges with adapting proximity detection systems to continuous haulage systems due to the length of these machines and the unique interaction with continuous mining machines.

MSHA solicits comments on other types of mobile machines that should be required to be equipped with proximity detection systems. MSHA specifically solicits comments on circumstances where it may be appropriate to require loading machines, roof bolting machines, and feeder breakers to be equipped with a proximity detection system. Comments should provide specific information on rationale for requiring other types of mobile machines to be equipped with proximity detection systems, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

Each proximity detection system currently approved by MSHA for use in underground coal mines in the United States uses miner-wearable components. These systems cannot protect any miner who is not wearing a miner-wearable component.

Miners on the working section often work near coal hauling machines and scoops. Each miner on a working section can be exposed to pinning, crushing, or striking hazards from these machines and would need to wear a miner-

wearable component for protection. The proposal would require the mine operator to provide a miner-wearable component to be worn by each miner on the working section, except longwall working sections. A working section is defined in existing § 75.2 as all areas of the coal mine from the loading point of the section up to and including the working faces.

To assess the costs of the proposed rule, MSHA estimated that there are seven miners per working section. In addition, other persons may visit the working section on occasion, such as dust samplers, surveyors, electricians, or mine examiners, and would need a miner-wearable component.

MSHA solicits comments on the numbers of persons who may be on the working section during a single shift. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

3. Proposed Phase-in Schedule for Proximity Detection Systems on Coal Hauling Machines and Scoops

Proposed § 75.1733(a) would phase in the use of proximity detection systems according to the following schedule.

Proposed § 75.1733(a) (1) would require coal hauling machines and scoops manufactured after the effective date of a final rule to meet the rule's requirements no later than 8 months after the effective date of the final rule. These machines would need to meet the requirements in this section when placed in service with a proximity detection system. The Agency intends that a machine is placed in service when the machine equipped with a proximity detection system is placed in the underground coal mine.

Proposed § 75.1733(a) (2) would require coal hauling machines or scoops manufactured and equipped with a proximity detection system on or before the effective date of a final rule to meet the rule's requirements no later than 8 months after the effective date of the final rule when modifications to the existing proximity detection system can be made underground; or 36 months after the effective date of the final rule when the existing proximity detection system cannot be modified underground or needs to be replaced with a new proximity detection system.

Proposed § 75.1733(a) (3) would require coal hauling machines and scoops manufactured and not equipped with a proximity detection system on or before the effective date of a final rule to meet the rule's requirements no later than 36 months after the effective date of the final rule.

These machines would need to meet the requirements in this section when placed in service with a proximity detection system.

Several commenters on the RFI recommended that MSHA consider a phase-in approach with separate compliance dates addressing new equipment, rebuilt equipment, and equipment in service. One commenter encouraged MSHA to proceed cautiously and to provide the time required to assure the development of reliable and effective systems. Another commenter stated that machines should be retrofitted with proximity detection systems in a shop or during rebuild.

The proposed phase-in schedule would provide an appropriate amount of time for manufacturers to produce proximity detection systems; for manufacturers and mine operators to install proximity detection systems on newly manufactured machines or modify in-service proximity detection systems and machines; and for mine operators to install proximity detection systems on machines not equipped by the effective date of a final rule.

In determining the schedule, MSHA considered the availability of MSHA-approved proximity detection systems, the estimated number of machines that would be replaced by newly manufactured machines during this period, manufacturers' capacity to produce and install systems for

these machines, and manufacturers' and mine operators' ability to produce and install systems on existing equipment. The phase-in schedule would allow mine operators time to train their workforce on proximity detection systems.

MSHA considers the date that the machine was manufactured as the date identified on the machine or otherwise provided by the manufacturer. MSHA considers coal hauling machines and scoops to be equipped with a proximity detection system when the machine-mounted components are installed on the machine and miners are provided with the miner-wearable components.

The proposed rule would allow 8 months for mine operators to install proximity detection systems on coal hauling machines and scoops manufactured after the effective date of a final rule. These newly manufactured machines can be equipped with proximity detection systems as part of the manufacturing process. MSHA believes that this 8-month time period would allow manufacturers and mine operators sufficient time to obtain MSHA approval under existing 30 CFR parts 18 or 36 and install proximity detection systems. The proposed 8-month time period would also allow mine operators time to inform and train their workforce on proximity detection systems. MSHA believes it is important

for coal hauling machines and scoops equipped with a proximity detection system to meet requirements when placed in service to assure that miners are protected from pinning, crushing, and striking hazards.

The proposed rule would allow 8 months for mine operators to make any needed modifications to proximity detection systems that were installed on coal hauling machines and scoops before the effective date of a final rule. Proximity detection systems approved and in use on coal hauling machines or scoops in underground mines have a visual warning signal on the machine-mounted component and both a visual and audible warning signal on the miner-wearable component. These systems might require modification of the proximity detection warning signals to make them distinguishable from other signals. MSHA believes that these modifications could be done underground during a maintenance shift. Allowing 8 months for these machines would also provide operators time to obtain MSHA approvals for the modifications and to provide training. MSHA estimates that, as of January 2015, at least 79 coal hauling machines and 50 scoops in use in underground coal mines have been equipped with a proximity detection system.

The proposed rule would allow 36 months for mine operators to install proximity detection systems on coal

hauling machines and scoops manufactured and not equipped with a proximity detection system on or before the effective date of a final rule. This time period would allow mine operators time to schedule installations during planned rebuilds or scheduled maintenance and to train their workforce on proximity detection systems. MSHA believes it is important for coal hauling machines and scoops equipped with a proximity detection system to meet requirements when placed in service to assure that miners are protected from pinning, crushing, and striking hazards. MSHA estimates that, as of January 2015, there are 1,283 coal hauling machines and 704 scoops in service on the working sections in underground coal mines that would need to be equipped with a proximity detection system. MSHA would also provide 36 months to mine operators with mobile machines already equipped with a proximity detection system that would require the installation of a new proximity detection system or modifications to the system could not be done underground to meet the rule's requirements.

This proposed rule would also apply to diesel-powered coal hauling machines and scoops on the working section. MSHA is unaware of any permissible diesel-powered machines equipped with proximity detection systems in the United States. MSHA anticipates challenges with installing

proximity detection systems on diesel-powered machines due to the additional modifications required to the mechanical systems.

MSHA acknowledges that it will take time to obtain MSHA approvals to equip coal hauling machines and scoops with proximity detection systems. MSHA must approve miner-wearable components and electrical machines equipped with proximity detection systems as permissible equipment under existing regulations in 30 CFR part 18. Diesel-powered machines must be approved under existing regulations in 30 CFR part 36.

MSHA solicits comments on the proposed phase-in schedules. MSHA also solicits comments on what, if any, modifications may be needed on mobile machines already equipped with proximity detection systems. MSHA also solicits comments on whether the modifications could be made underground, and whether there are any issues that may impact the proposed phase-in schedules. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

4. Training Requirements for Miners Working Near Machines Equipped with Proximity Detection Systems

In response to the RFI, some commenters stated that miners will need task training when machines are equipped with a proximity detection system. As the proximity detection systems are phased in, mine operators would be required to provide miners with new task training under existing part 48. MSHA intends that mine operators would address safety issues that might arise during the proposed phase-in schedule, such as some machines being equipped with proximity detection systems while others are not, through existing new task training requirements, with an emphasis on basic safety rules and practices. MSHA believes that as mobile machines are equipped with proximity detection there will be an added layer of safety to the basic safety rules and practices, assuring that the risk of injury would not increase during the phase-in period.

Miners working near mobile machines equipped with proximity detection systems would engage in different and unfamiliar machine operating procedures resulting from new work positions, machine movements, and new visual or auditory signals. Existing § 48.7(a) requires that miners assigned to new work tasks as mobile equipment operators not perform new work tasks until training has been completed.

As required under existing § 48.7(a)(3) for new or modified machines and equipment, equipment and machine operators must be instructed in safe operating procedures applicable to new or modified machines or equipment to be installed or put into operation in the mine, which require new or different operating procedures. In addition, existing § 48.7(c) requires miners assigned a new task not covered in existing § 48.7(a) be instructed in the safety and health aspects and safe work procedures of the task prior to performing such task.

Mine operators would be required to provide new task and equipment training on the proper functioning of the proximity detection system before requiring miners to operate or work near a machine equipped with a proximity detection system. New task training (which is separate from new miner training under existing § 48.5 and annual refresher training under existing § 48.8) must occur before miners operate machines equipped with a proximity detection system. New task training helps assure that miners have the necessary skills to perform new tasks prior to assuming responsibility for the tasks. Mine operators should assure that this training includes hands-on training during supervised non-production activities. The hands-on training allows miners to experience how the systems work and to

locate the appropriate work positions around machines. Based on Agency experience, the hands-on training is most effective when provided in miners' work locations.

MSHA solicits comments on the proposed training for miners who operate or work near machines equipped with proximity detection systems. Comments should address the type, frequency, and content of training in addition to which miners should be trained. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

5. Request for Comments on Requiring Proximity Detection Systems on Mobile Machines in Underground Metal and Nonmetal Mines

Metal and nonmetal mine operators would not be required to equip machines with proximity detection systems under this proposal. In response to the RFI, some commenters suggested that proximity detection systems should not be required in underground stone mines. These commenters stated that they were not aware of pinning, crushing, or striking accidents in underground stone mines that might have been prevented by proximity detection systems. One commenter stated that applying proximity detection technology to the equipment used in underground stone mines

would not serve to reduce the risk of injuries and fatalities. Two commenters stated that underground stone miners work in enclosed cabs and are not exposed to the hazards presented by remote controlled equipment. Three commenters stated that an electromagnetic field from a proximity detection system could set off electric detonators used in underground stone mines. Two commenters also stated that proximity detection systems had not been tested on equipment in underground metal and nonmetal mines.

MSHA has analyzed data on pinning, crushing, and striking accidents in underground metal and nonmetal mines, and related equipment. MSHA estimates that, based on the Agency's most recent analysis, there are 66 continuous mining machines, 80 shuttle cars, and 1,371 scoops, loaders, load-haul-dumps, and mucking machines used in underground metal and nonmetal mines. Since 1984, five fatalities have occurred in underground metal and nonmetal mines where the use of a proximity detection system could have prevented the accident (since these miners were found in a proximity detection system warning/stopping zone): one involving a continuous mining machine and four involving a scoop, loader, load-haul-dump machine, or mucking machine.

Generally, mining conditions in underground metal and nonmetal mines are not the same as conditions in underground

coal mines. Differences include wider and higher entries, which improve visibility and allow more room for miners to work around the equipment. The Agency's experience with use of proximity detection systems in the United States has focused on underground coal mines. Therefore, in response to comments to the RFI and the less frequent occurrence of crushing, striking, and pinning accidents in underground metal and nonmetal mines, the proposed requirements are limited to underground coal mines.

MSHA solicits comments on whether the Agency should require proximity detection systems on machines used in underground metal and nonmetal mines, and if so, which types of machines and in what timeframes. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

6. Request for Comments on Requiring Miners to Wear Reflective Clothing in Underground Coal and Metal and Nonmetal Mines

MSHA is also considering a requirement that miners in underground mines wear reflective material in order to reduce the hazards associated with poor visibility. Existing § 75.1719-4(d) requires that each person who goes underground in a coal mine wear a hard hat or hard cap with

a minimum of six square inches of reflecting tape or equivalent paint or material on each side and back. Metal and nonmetal mines do not have a similar requirement. In MSHA's experience, however, many miners in underground coal and metal and nonmetal mines also wear clothing with reflective material. One of the recommendations in MSHA's 2010 safety initiative, *Safety Practices around Shuttle Cars and Scoops in Underground Coal Mines*, was that "Miners should always wear reflective clothing so that they can be clearly seen by the shuttle car and scoop drivers."

MSHA solicits comments on whether the Agency should require that miners wear reflective material to make them more visible to equipment operators and, if so, how much and where. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, feasibility considerations, and supporting data.

B. *§ 75.1733(b) Requirements for Proximity Detection Systems*

Proposed § 75.1733(b) (1) would require that a proximity detection system cause a machine to stop before contacting a miner except for a miner who is in the on-board operator's compartment. This proposed requirement would apply to coal hauling machines and scoops on the working section to

prevent pinning, crushing, or striking accidents. MSHA intends that the proximity detection system would stop all movement of the machine, such as tramming, conveyor chain movement, and raising or lowering the bucket of a scoop that could cause the machine to contact a miner. The machine would remain stopped while any miner is within a programmed stop zone.

In the RFI, MSHA asked for comments on the size and shape of the area around machines that a proximity detection system monitors and how systems can be programmed and installed to provide different zones of protection depending on machine function. Some commenters stated that an effective proximity detection system should cause the machine to stop before a miner enters the hazardous area around the machine. Several commenters suggested that protection zones should be largest when tramming and that reduced protection zones are needed for certain mining operations.

Some commenters stated that zone size should be determined using a risk assessment considering the speed at which the proximity detection system can alert the operator, the reaction time of the operator, and the number of people in the working area. Another commenter stated that work

practices vary among mines so that one specified zone may not work for all mines.

In its comments on the RFI, NIOSH stated that the goal of a proximity detection system should be to prevent machine actions or situations that injure workers while not placing restrictions on how the workers do their jobs. NIOSH also stated that the total time required for performing proximity detection system functions, plus a safety factor, should be used to define the size of detection zones around machines. NIOSH stated that the total time required includes: (1) detection of a potential victim; (2) decision processing to determine if a collision-avoidance function is needed; (3) initiation of the collision-avoidance function; and (4) implementation of the collision-avoidance function. NIOSH stated that any rule should be performance-based.

MSHA's experience with proximity detection systems indicates that causing a machine to stop before contacting a miner would provide appropriate protection to prevent pinning, crushing, and striking accidents. Machines traveling at faster speeds generally need more time to stop. MSHA has observed proximity detection systems that are designed to slow a machine before causing it to stop. A performance-based approach would allow mine operators and manufacturers to address mine- and machine-specific

conditions when determining the appropriate settings for a proximity detection system. Performance-based requirements focus on attaining objectives, such as stopping a machine before contacting a miner, rather than being prescriptive in how the result is achieved, such as stopping within a specified distance. Mine- and machine-specific conditions could include steep or slippery roadways, tramming speed of machinery, location of the miner-wearable component, and the accuracy of the proximity detection system. Mine operators would be responsible for programming a proximity detection system to initiate the stop-movement function so that the machine stops before contacting a miner.

MSHA solicits comments on whether to require a proximity detection system to cause the machine to slow before causing it to stop and, if so, what requirement would be appropriate. MSHA also solicits comments on effective methods or controls, working in conjunction with the proximity detection system, to protect the on-board operator from sudden stops. MSHA also requests comments on what types of machine movement the proximity detection system should stop, beyond movement related to tramming coal hauling machines and scoops. Comments addressing these issues should be specific, and include alternatives, rationale for suggested alternatives, safety benefits to

miners, technological and economic feasibility considerations, and supporting data.

During MSHA's visit to South Africa, staff observed that one mine operator designed its proximity detection systems to stop scoops eight feet from a miner and to stop shuttle cars six feet from a miner. Prior to the introduction of proximity detection systems at their mines, the company's policy was that miners must maintain a minimum distance of one meter (approximately three feet) from all operating mobile machines. MSHA considered proposing a prescriptive requirement that would specify that a machine must stop no closer than three feet from a miner. MSHA also considered proposing other specific stopping distances, e.g., six feet from a miner, but decided on a performance-based approach.

MSHA solicits comments on whether a performance-based approach would be appropriate. Comments should be specific, and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

The interaction of multiple machine types equipped with proximity detection systems is likely to cause changes in work practices. These changes would affect where miners are positioned near machines and routes that machines travel.

For example, continuous mining machines and coal hauling machines must get close, and often touch, during the transfer of material from one machine to the other. When a coal hauling machine equipped with a proximity detection system gets near a continuous mining machine with a proximity detection system, the overlap of the two protection zones may limit where miners may position themselves (1) to remain safe, (2) avoid activation of warning signals, or (3) avoid unintentionally stopping the machines.

MSHA solicits comments on how the use of proximity detection systems and the overlap of protection zones on multiple types of machines operating on the same working section might affect miners' work positions, such as a continuous mining machine operator who may need to work close to the continuous mining machine when cutting coal or rock. Comments should be specific, and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

Proposed § 75.1733(b) (1) would provide an exception for a miner who is in an on-board operator's compartment. Machines with an on-board operator would not function if the proximity detection system prevents machine movement when a

miner is on the machine. The proposed rule would require machines to stop before contacting any miner not in the operator's compartment.

MSHA observed that, in South Africa, the continuous mining machine operator was provided a smaller protection zone around the shuttle car than for other miners. This allowed the continuous mining machine operator to be closer to the shuttle car when it got near the continuous mining machine for loading. The proximity detection system on the shuttle car caused the machine to slow down as it neared the continuous mining machine operator, reducing the pinning, crushing, or striking hazard. Similarly, an underground coal mine operator in the United States, working with a proximity detection system manufacturer, developed a system which would stop a coal hauling machine when it got within approximately ten feet of a miner. However, the continuous mining machine operator can press a button on the miner-wearable component and allow the coal hauling machine to slowly approach the continuous mining machine.

Commenters to the RFI generally stated that machines with an on-board operator's compartment should have a proximity detection system that allows machines to function when the operator is in the operator's compartment. One commenter stated that a proximity detection system can

include exclusion zones to allow mobile machines to move while a miner is in the exclusion zone but still protect other miners.

Some coal hauling machines and scoops may be used to transport mine personnel if certain safeguards are in place. (MSHA Program Policy Manual, Vol. V - Coal Mines, Criteria - Mantrips, October 2003 (Release V-34), pp. 126-127.) Under the proposed rule, a coal hauling machine or scoop equipped with a proximity detection system that is being used to transport mine personnel would not operate if miners wore their miner-wearable components. Both the coal hauling machine or scoop being used to transport miners and the miners being transported, however, would have to be equipped with a properly functioning proximity detection component before they enter the working section. Under one possible scenario, the coal hauling machine or scoop could stop to allow miners to get off before it continues onto the working section. Miners could then don a miner-wearable component before entering the working section.

MSHA solicits comments on the exclusion zone for the on-board operator. MSHA also requests information on issues related to the use of coal hauling machines or scoops, equipped with proximity detection systems, to transport miners to the working section. Comments should be specific,

and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

Proposed § 75.1733(b) (2) would require the proximity detection system to provide warning signals, distinguishable from other signals, that alert miners before the system causes a machine to stop: an audible and visual warning signal on any miner-wearable component and a visual warning signal on the machine.

In the RFI, MSHA asked for information on the most effective protection that proximity detection systems could provide. In response, some commenters stated that a proximity detection system should include a warning prior to causing the machine to stop movement. One commenter stated that proximity detection systems should include a range of escalating alerts depending on the proximity to a hazard.

MSHA-approved proximity detection systems alert miners before causing machine movement to stop. The proposal would require audible and visual warning signals on any miner-wearable component and a visual warning signal on the machine before the system causes the machine to stop. The audible and visual warnings provided by miner-wearable components allow the miner wearing the component to move away from the machine before the proximity detection system

causes the machine to stop. The visual warning provided on the machine would be required to alert the on-board operator.

Two proximity detection systems currently approved for use on mobile machines in the United States provide an audible and visual warning signal from a miner-wearable component and a visual warning signal from the machine before causing a machine to stop. In MSHA's experience, providing warning signals before causing the machine to stop provides a margin of safety to allow a miner near the moving machine an opportunity to be proactive and move away from the machine to avoid danger.

MSHA solicits comments on the proposed requirement that the proximity detection system provide audible and visual warning signals on miner-wearable components and a visual warning signal on the mobile machines. Early research suggests that providing warnings at varying distances may be appropriate dependent on the machine speed. (Sanders and Kelly, 1981.) Machine operators often need to redirect their attention from the front to the rear of the machine, and in some cases, must switch seats when changing directions. As a result, a visual warning signal on the machine may not always be in the operator's direct line of sight.

MSHA solicits comments on whether requiring audible warning signals in addition to visual warning signals on the machine would help assure that miners, including the machine operator, know that a miner is in the warning zone and the machine is about to stop. MSHA also solicits comments on whether requiring the use of a specific visual warning on the machine, e.g., strobe lights, clustered light-emitting diode (LED) lights, or other types of visual signals, would help assure that the visual warning alerts miners near the machine, including the machine operator. Comments should be specific and include alternatives, rationale for suggested alternatives, address how the alternatives would practically and effectively be implemented, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

Proposed § 75.1733(b) (3) would require that a proximity detection system provide a visual signal on the machine that indicates the machine-mounted components are functioning properly.

Commenters, in response to the RFI, generally stated that a proximity detection system should include system diagnostics and indicate that the system is functioning properly. In its comments on the RFI, NIOSH stated that

each proximity detection system should perform self-diagnostics to identify software or hardware problems.

In MSHA's experience, proximity detection systems used on coal hauling machines and scoops provide a visual signal to indicate the system is functioning properly. This provides an added margin of safety and is consistent with standard safety practices. The visual signal allows miners to readily determine that a proximity detection system is functioning properly. MSHA believes that an unobstructed visual signal is preferable to an audible signal for providing feedback to miners because a visual signal cannot be obscured by surrounding noise. An LED may be an acceptable visual signal.

MSHA considers the proximity detection system to be functioning properly when the system is working as designed and will cause the machine to stop before contacting a miner; provide audible and visual warning signals, distinguishable from other signals, that alert miners, including the machine operator, before causing the machine to stop; provide the required warning signals on the machine; and prevent movement of the machine, except for purposes of repair, if any machine-mounted component is not working as intended.

MSHA solicits comments on the proposed requirement. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

Proposed § 75.1733(b)(4) would require that a proximity detection system prevent movement of the machine if any machine-mounted component of the system is not functioning properly. However, a system may allow machine movement if an audible or visual warning signal, distinguishable from other signals, is provided during movement. Such movement would be permitted only for purposes of relocating the machine from a location that is unsafe for the miner conducting repairs.

Commenters in response to the RFI had different opinions on whether MSHA should permit an operator to override the shutdown feature of a proximity detection system to allow machine movement in a particular circumstance. One commenter stated that a proximity detection system must provide a continuous self-check capability so that if the system is not functioning properly, the machine cannot be operated. This same commenter stated that only an appointed person should have the authority to override a proximity detection system.

Several commenters stated that a proximity detection system should allow for temporary deactivation, such as an emergency override, in case a system is not functioning properly while a machine is under unsupported roof. Another commenter, however, stated that a proximity detection system should not have an override feature.

MSHA intends that proximity detection systems would prevent all machine movement if any machine-mounted component is not functioning properly. This prevention of movement includes tramming, conveyor chain movement, raising or lowering the bucket of a scoop, and any movements that could cause the machine to contact a miner. A coal hauling machine or scoop equipped with a proximity detection system that is malfunctioning could expose miners to pinning, crushing, and striking hazards. When any machine-mounted component of the system is not functioning properly, preventing all machine movement helps to assure that miners are protected.

The proposed rule would allow the machine's proximity detection system to be overridden or bypassed to move the machine from an unsafe location to protect miners. Overriding or bypassing the proximity detection system should only occur for the time necessary to move the machine to a safe repair location. The proposed provision to allow

the machine to be moved would require an audible or visual warning signal during the movement. In MSHA's experience, either type of warning signal is sufficient to warn miners that the machine-mounted component of the proximity detection system is not functioning properly.

MSHA solicits comments on the proposed requirements. MSHA requests comments addressing whether requiring both an audible and visual warning signal is needed to assure that all miners on the working section know that the machine-mounted component is not functioning properly. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

Proposed § 75.1733(b) (5) would require that a proximity detection system be installed to prevent interference that adversely affects performance of any electrical system.

Some commenters in response to the RFI stated that interference of proximity detection systems with other mine electrical systems is a concern. However, manufacturers of the approved proximity detection systems stated that their systems do not have interference issues. A commenter stated that electromagnetic interference may prevent these systems from providing complete protection to miners. Several

commenters stated that systems must be designed and tested for possible and known sources of interference before a requirement for proximity detection is issued. A commenter expressed concern that a proximity detection system may detonate explosives due to electromagnetic field interference.

Electrical systems used in the mine, including proximity detection systems, can adversely affect the function of other electrical systems through the generation of electromagnetic interference, which includes radio frequency interference. MSHA has not received reports of adverse interference, with or from other electrical systems, associated with the approximately 583 proximity detection systems in use in underground coal mines. However, there have been instances of adverse performance of a remote controlled system, an atmospheric monitoring system, and a machine-mounted methane monitoring system when a hand-held radio was in use near the affected systems. Electromagnetic output of approved proximity detection systems is substantially lower and uses different frequencies than other mine electrical systems, such as communication and atmospheric monitoring systems. It is less likely for a proximity detection system to encounter interference, even in low seam mines. Under the proposal, the mine operator

would be required to evaluate a proximity detection system used on coal hauling machines and scoops for interference that adversely affects other electrical systems, including blasting circuits and other proximity detection systems, in the mine and take adequate steps to prevent adverse interference. Steps could include design considerations, such as the addition of shielding, or providing adequate separation between electrical systems.

MSHA solicits comments on the proposed requirement that a proximity detection system be installed in a manner that prevents interference that adversely affects performance of any electrical system. MSHA also solicits comments on any experience or issues related to the use of proximity detection systems from different manufacturers on the same working section. MSHA requests comments on any experience or issues related to the use of a single miner-wearable component with proximity detection systems from different manufacturers or with different models from the same manufacturer. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

Proposed § 75.1733(b) (6) would require that a proximity detection system be installed and maintained in proper

operating condition by a person trained in the installation and maintenance of the system.

A commenter in response to the RFI stated that maintenance personnel and machine operators will need training to assure that they understand how the proximity detection system functions and any maintenance requirements. This commenter also stated that proper installation of a proximity detection system is critical for reliable performance. Another commenter said that a few hours of classroom instruction and approximately one hour of underground training for machine operators has proven adequate and that maintenance training requires about four hours.

Based on MSHA's experience with proximity detection systems, proper functioning of a proximity detection system is directly related to the quality of the installation and maintenance of the system. This proposed training requirement for installing and maintaining a proximity detection system is in addition to training required under existing 30 CFR part 48. The new training requirement would help assure that the person performing installation and maintenance of a proximity detection system understands the system and can perform the work necessary to assure that the system operates properly. Appropriate training could

include adjusting detection zones, trouble-shooting electrical connections, and replacing and adjusting machine-mounted and miner-wearable components.

MSHA anticipates that mine operators would assign miners to perform most maintenance activities, but representatives of the manufacturer may perform some maintenance. Based on Agency experience, mine operators would generally arrange for proximity detection system manufacturers to provide appropriate training to miners for installation and maintenance. Miners receiving training from manufacturers' representatives would, in most cases, provide training for other miners who may undertake installation and maintenance duties at the mine. In MSHA's experience, many mines use the train-the-trainer concept for installation and maintenance activities related to certain mining equipment.

A system must operate properly to protect miners near the machine. This includes the machine-mounted components and the miner-wearable components. MSHA would expect the mine operator to demonstrate that a proximity detection system in use at their mine, on a coal hauling machine or scoop, is installed and maintained in proper operating condition. Mine operators could determine if the system is maintained in proper operating condition using the

procedures described in the system manufacturer's instructions.

When determining whether the proximity detection system is installed and maintained in proper operating condition, the position of the miner-wearable component on the miner and the distance from the closest surface of the machine to the miner-wearable component should be considered. Mine- and machine-specific conditions, including steep or slippery roadways, tramming speed of machinery, location of the miner-wearable component, and the accuracy of the proximity detection system, should also be considered.

MSHA solicits comments on mine operators' experiences with maintaining proximity detection systems in proper operating condition. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

C. § 75.1733(c) *Proximity detection system checks*

Proposed § 75.1733(c) would address requirements for proximity detection system checks.

Proposed § 75.1733(c)(1) would require that mine operators designate a person to perform a check of machine-mounted components of the proximity detection system to verify that components are intact and the system is

functioning properly, and to take action to correct defects:

(1) before the machine is operated at the beginning of each shift when the machine is to be used; (2) immediately prior to the time the machine is to be operated if not in use at the beginning of a shift; or (3) within one hour of a shift change if the shift change occurs without an interruption in production. For (1) and (2), MSHA anticipates that the check would occur before the machine is permitted to enter the working section.

In response to the RFI, several commenters stated that a proximity detection system should be checked at the beginning of each shift to verify that it is functioning properly. NIOSH commented that the machine operator should have a set of procedures to evaluate the system at the start of each shift.

The person designated to perform the check would verify that machine-mounted components are intact and the system is functioning properly. Machine-mounted components mounted on the outer surfaces of a machine could be damaged when the machine contacts a rib or heavy material falls against the machine. The check would also include observation of appropriate audible and visual warning signals. If any defect is found, the proposal would require it to be corrected before using the machine. Correcting defects

before the machine is used helps assure that the system functions properly and helps prevent miners' exposure to pinning, crushing, and striking hazards.

The check of the machine-mounted components would supplement the design requirement in proposed paragraph (b)(4) that the systems prevent movement of the machine if any machine-mounted component is not functioning properly. For example, the system may not be able to detect a displaced field generator, which could affect proper function. The check would help assure that machine-mounted components are positioned correctly and mounted properly on the machine and that the system will warn miners and stop machine movement appropriately.

Under existing § 48.7, miners who perform the required check must receive training in the health and safety aspects and safe operating procedures for work tasks, equipment, and machinery. In most cases, MSHA anticipates that the mine operator will designate the person operating a coal hauling machine or scoop to make the check of the proximity detection system.

The check in proposed § 75.1733(c)(1) would help assure that proximity detection systems function properly between the weekly examinations required under existing §§ 75.512 and 75.1914. The examination of electric machines under

existing § 75.512 must include the machine-mounted components of a proximity detection system. Existing § 75.512 requires electric equipment, including the machine-mounted components of proximity detection systems, to be examined, tested, and properly maintained by a qualified person at least weekly to assure safe operating conditions. When the qualified person finds a potentially dangerous condition on electric equipment, such equipment must be removed from service until such condition is corrected. Under existing § 75.1725, mobile and stationary machinery and equipment, which includes coal hauling machines and scoops, must be maintained in safe operating condition or removed from service. In addition, existing § 75.1914(a) requires that diesel-powered equipment be maintained in approved and safe condition or removed from service. Under existing § 75.1914(f), machine-mounted components of proximity detection systems on diesel-powered machines must be examined weekly.

MSHA solicits comments on the proposed requirement. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

Proposed § 75.1733(c) (2) would require that miner-wearable components be checked for proper operation at the beginning of each shift that the component is to be used and that defects be corrected before the components are used.

Several commenters on the RFI stated that the miner-wearable component should be checked at the beginning of each shift and that minimal training is necessary for miners to learn this task.

The proposed requirement that miner-wearable components be checked for proper operation at the beginning of each shift that the component is to be used would help assure that the miner is protected before getting near a machine. MSHA anticipates that each miner equipped with a miner-wearable component would check the component to see that it is not damaged and has sufficient power. The proximity detection systems that use these components can only function properly if the miner-wearable components have sufficient power.

MSHA intends that this check would be similar to the check that a miner performs on a cap lamp prior to the beginning of a shift. A mine operator, however, could also designate a person to check miner-wearable components before they are used. Mine operators must provide new task training, under 30 CFR part 48, for miners who will be

checking the miner-wearable components. If any defect is found, the proposal would require it to be corrected before using the component. This helps assure that the miner-wearable component functions properly and helps prevent miners' exposure to pinning, crushing, and striking hazards. If a miner-wearable component malfunctions during the shift, the miner wearing the component would have to leave the section until provided with a properly functioning miner-wearable component.

MSHA solicits comments on the proposed requirements. Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

D. *§ 75.1733(d) Certification and Records*

Proposed § 75.1733(d) would address certification and records requirements for proximity detection systems.

Proposed § 75.1733(d) (1) would require, at the completion of the check under proposed paragraph (c) (1), that a certified person under existing § 75.100 certify by initials, date, and time that the check was conducted. Defects found as a result of the check, including corrective actions and date of corrective action, would be required to be recorded.

The certification that would be required under proposed paragraph (d)(1) would help assure compliance and provide miners on the section a means to confirm that the required check under proposed (c)(1) was made. MSHA anticipates that, in most cases, the person making the certification of the on-shift examination under existing § 75.362(g)(2) would also make the certification of this check at the same time. The person making the check could communicate to a certified person that the check was performed.

The record of defects and corrective actions as a result of the check required under proposed paragraph (c)(1) of this section would be made by the completion of the shift, which is consistent with the requirements for records of hazardous conditions in existing § 75.363(b). If no defect is found, no record is needed. The requirement in proposed paragraph (d)(1) of this section would require a record of defects and corrective actions. Records of defects and corrective actions can be used to show a history of machine-mounted component defects at the mine and alert miners, representatives of miners, mine management, manufacturers, and MSHA of recurring problems and ways to address problems.

Proposed § 75.1733(d)(2) would require the operator to record defects found as a result of the check of miner-

wearable components in proposed paragraph (c)(2) of this section, including corrective actions and date of corrective action. This record can be used to show a history of miner-wearable component defects that can be used to alert miners, representatives of miners, mine management, manufacturers, and MSHA of recurring problems and ways to address problems. For miner-wearable components, no record would be needed unless a defect is found. A certification of the check for proper operation of miner-wearable components that would be required under proposed paragraph (c)(2) is not necessary because miners can readily check to confirm that the component is working.

Proposed § 75.1733(d)(3) would require that the operator make and retain records of the persons trained in the installation and maintenance of proximity detection systems. MSHA anticipates that many mine operators would train qualified persons, as defined by existing § 75.153, to install and perform maintenance on proximity detection systems; but the mine operator may train another miner who is not included on the list of certified and qualified persons required by existing § 75.159. A mine operator may make this record of the persons trained using existing MSHA Form 5000-23. Consistent with existing practice, mine operators would not need to make and retain records of

training for proximity detection system manufacturers' employees who install or perform maintenance on the systems.

Proposed § 75.1733(d) (4) would require that the mine operator maintain records under proposed § 75.1733(d) (1), (d) (2), and (d) (3) in a secure book or electronically in a secure computer system not susceptible to alteration. Based on MSHA's experience with other safety and health records, the Agency believes that records should be maintained so that they cannot be altered. In addition, electronic storage of information and access through computers is an increasingly common business practice in the mining industry. This proposed provision would permit the use of electronically stored records provided they are secure, are not susceptible to alteration, are able to capture the information and signatures required, and are accessible to the representative of miners and MSHA.

Care must be taken in the use of electronic records to assure that the secure computer system will not allow information to be overwritten or deleted after being entered. MSHA believes that electronic records meeting these criteria are practical and as reliable as paper records. MSHA also believes that once records are properly completed and reviewed, mine management can use them to evaluate whether the same conditions or problems, if any,

are recurring, and whether corrective measures are effective. The proposal provides mine operators flexibility to maintain the records in a secure book or electronically in a secure computer system that they already use to satisfy existing recordkeeping requirements.

Proposed § 75.1733(d) (5) would require that the mine operator retain records under proposed § 75.1733(d) (1), (d) (2), and (d) (3) for at least one year and make them available for inspection by authorized representatives of the Secretary and representatives of miners. The operator may provide access electronically or by providing paper copies of records. MSHA believes that keeping records for one year provides a history of the conditions documented at the mine to alert miners, representatives of miners, mine management, manufacturers, and MSHA of recurring problems and ways to correct problems.

MSHA solicits comments on the recordkeeping requirements in proposed § 75.1733(d). Comments should be specific and include alternatives, rationale for suggested alternatives, safety benefits to miners, technological and economic feasibility considerations, and supporting data.

III. Preliminary Regulatory Economic Analysis

A. Executive Orders (E.O.) 12866 and 13563

Executive Orders 12866 and 13563 direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasizes the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility. To comply with these Executive Orders, MSHA has prepared a Preliminary Regulatory Economic Analysis (PREA) for the proposed rule. The PREA contains supporting data and explanation, which is summarized in this preamble, including the covered mining industry, costs and benefits, feasibility, small business impacts, and information collection requirements. The PREA can be accessed electronically at <http://www.msha.gov/REGSINF5.HTM>. A copy of the PREA can be obtained from MSHA's Office of Standards, Regulations and Variances at the address in the ADDRESSES section of this preamble. MSHA is seeking robust comments on the validity of the Agency's costs and benefits estimates presented in this preamble and in the PREA, and on

the supporting data and assumptions the Agency used to develop these estimates.

Under E.O. 12866, a significant regulatory action is one meeting any of a number of specified conditions, including the following: having an annual effect on the economy of \$100 million or more, creating a serious inconsistency or interfering with an action of another agency, materially altering the budgetary impact of entitlements or the rights of entitlement recipients, or raising novel legal or policy issues. The Office of Management and Budget (OMB) has determined that the proposed rule is a significant regulatory action because it raises novel legal and policy issues.

B. Population at Risk

The proposed rule would apply to all underground coal mines in the United States. In 2014, there were approximately 300 active underground coal mines using mobile machines on the working section. These mines employ approximately 39,870 miners (excluding office workers).

C. Net Benefits

Under the Mine Act, MSHA is not required to use estimated net benefits as the basis for its decision. At a 0 percent discount rate over 10 years, the estimated annualized values for net benefits of the proposed rule

would be \$2.1 million. At a 3 percent discount rate over 10 years, the estimated annualized values for net benefits of the proposed rule would be \$0.3 million. At a 7 percent discount rate over 10 years, the estimated annualized values for net benefits of the proposed rule would be -\$2.0 million.

MSHA anticipates the proposed rule would provide several benefits that were not quantified due to a lack of definitive information. For example, the proposed rule would result in additional savings to mine operators who would be able to avoid production delays typically associated with mine accidents. Pinning, crushing, and striking accidents can disrupt production at a mine during the time it takes to remove the injured miners, investigate the cause of the accident, and clean up the accident site. Such delays can last for a shift or more. Factors such as lost production, damaged equipment, and other miscellaneous expenses could result in significant costs to mine operators; however, MSHA has not quantified these savings due to the imprecision of the data.

The dollar estimate of benefits and costs are explained further in the Benefits (D) and Compliance Costs (E) sections.

D. Benefits

The proposed rule would significantly improve safety protections for underground coal miners by reducing their risk of being crushed, pinned, or struck by mobile machines. MSHA projects that the benefits of the proposed rule would gradually increase over time as the number of proximity detection systems in operation increases during the first 36 months after the effective date of a final rule.

MSHA reviewed the Agency's investigation reports for all powered haulage and machinery accidents that occurred from 1984 through 2014 (31 years) and determined that the use of proximity detection systems could have prevented 42 fatalities and 179 nonfatal injuries involving pinning, crushing, or striking accidents with coal hauling machines and scoops (since these miners were located in a proximity detection system warning/stopping zone). This count excludes fatalities and injuries that would not have been prevented by proximity detection systems on mobile machines, such as when a roof or rib fall pins a miner against a mobile machine or a mobile machine strikes and pushes another machine into a miner.

To estimate the number of injuries and fatalities that the proposed rule would prevent, MSHA projected the number of injuries and fatalities that proximity detection systems

installed on mobile machines would prevent over the next 10 years. This projection was based on MSHA's review of the historical data involving injuries and fatalities occurring from 1984 through 2014. Based on the review of the historical data, MSHA projects that the proposed rule's requirements would prevent approximately 70 injuries and 15 fatalities over the next 10 years.

To estimate the monetary values of the reductions in deaths and nonfatal injuries, MSHA uses an analysis of the imputed values based on a Willingness-to-Pay approach. This approach relies on the theory of compensating wage differentials (i.e., the wage premiums paid to workers to accept the risk associated with various jobs) in the labor market. A number of studies have shown a correlation between higher job risk and higher wages, suggesting that employees demand monetary compensation in return for incurring greater risk. The benefit of preventing a fatality is measured by what is conventionally called the Value of a Statistical Life (VSL), defined as the additional cost that individuals would be willing to bear for improvements in safety (that is, reductions in risks) that, in the aggregate, reduce the expected number of fatalities by one. MSHA emphasizes that the VSL is a statistical concept for comparing risk reduction and not the value of an

individual's life. For the primary estimate, MSHA used a VSL of \$9.4 million (2014 dollars), 40 percent of the VSL for permanent disabilities, and approximately 1 percent of the VSL for non-disabling injuries. Detailed information about how MSHA estimated the benefits are available in the PREA supporting this proposed rule. MSHA estimates the total undiscounted benefit of the proposed rule over 10 years would be \$182.6 million at a 0 percent discount rate, \$151.5 million at a 3 percent discount rate, and \$120.0 million at a 7 percent discount rate. The total annualized benefits over 10 years would be approximately \$18.3 million at a 0 percent discount rate, \$17.2 million at a 3 percent discount rate, and \$16.0 million at a 7 percent discount rate.

E. Compliance Costs

This section presents MSHA's estimates of the total costs to underground coal mine operators to comply with the proposed rule over a 10-year period. MSHA based the cost estimates on the likely actions that the Agency believes would be necessary to comply with the proposed rule. MSHA estimates that the total costs of the proposed rule over a 10-year period would be approximately \$161 million at a 0 percent discount rate, \$149 million at a 3 percent discount rate, and \$135 million at a 7 percent discount

rate. The total cost annualized over 10 years would be approximately \$16.1 million per year at a 0 percent discount rate, \$16.9 million per year at a 3 percent discount rate, and \$17.9 million per year at a 7 percent discount rate.

As noted earlier, more detailed information about how MSHA estimated benefits and costs are available in the Preliminary Regulatory Economic Analysis (PREA) supporting this proposed rule. The PREA is available on MSHA's website, at <http://www.msha.gov/REGSINF5.HTM>.

IV. Feasibility

MSHA has concluded that the requirements of the proposed rule would be both technologically and economically feasible, and that the 36-month phase-in period would facilitate implementation of the proposed rule.

A. Technological Feasibility

MSHA has concluded that the proposal is technologically feasible. Mine operators are capable of equipping coal hauling machines and scoops with proximity detection systems in accordance with the proposed compliance dates. Proximity detection systems required under the proposal already exist and are commercially available for use in underground coal mines.

MSHA has experience with manufacturers of proximity detection systems and mine operators who have installed

proximity detection systems on coal hauling machines and scoops. MSHA has approved two proximity detection systems for permissibility under existing regulations in 30 CFR part 18, which can be installed on coal hauling machines and scoops. As of January 2015, at least 79 coal hauling machines and 50 scoops equipped with a proximity detection system are operating in underground coal mines in the United States. MSHA observed these systems provide warnings and stop coal hauling machines and scoops appropriately. MSHA also observed these coal hauling machines function properly while interacting with a continuous mining machine equipped with a proximity detection system. There were approximately eight people equipped with miner-wearable components during this demonstration.

MSHA also observed mobile machines, including coal hauling machines, scoops, and continuous mining machines, equipped with proximity detection systems operate in South Africa. MSHA observed proximity detection systems from several manufacturers provide warnings and slow and stop machines at appropriate distances.

Based on MSHA's experience with approving four proximity detection systems under 30 CFR part 18 as permissible for use on continuous mining machines and its observations in South Africa, the Agency anticipates that

other manufacturers may develop proximity detection systems for use with coal hauling machines and scoops in the United States.

Continuous haulage systems consist of multiple interconnected mobile and bridge units. Although MSHA has no experience with continuous haulage systems equipped with a proximity detection system, MSHA anticipates that existing proximity detection systems can be adapted to continuous haulage systems to provide complete proximity detection coverage on each of the interconnected units. By connecting the proximity detection system with the electrical circuitry of the continuous haulage system, the proximity detection system can de-energize the entire continuous haulage system or stop all tram motors. As stated previously MSHA anticipates challenges with adapting proximity detection systems to continuous haulage systems due to the length of these machines and the unique interaction with continuous mining machines.

MSHA solicits comments on the technological feasibility of equipping coal hauling machines and scoops with proximity detection systems. MSHA specifically solicits comments on equipping continuous haulage systems with proximity detection systems. Comments should be specific and include

alternatives, rationale for suggested alternatives, safety benefits to miners, and supporting data.

B. Economic Feasibility

MSHA has traditionally used a revenue screening test – whether the yearly compliance costs of a regulation are less than one percent of revenues, or are negative (e.g., provide net cost savings) – to establish presumptively that compliance with the regulation is economically feasible for the mining industry. Based on this test, MSHA has concluded that the requirements of the proposed rule are economically feasible.

The annualized cost of the proposed rule to underground coal mine operators, discounted at 7 percent over 10 years, is \$17.9 million. This represents approximately 0.08 percent of total annual revenue of \$21.2 billion (\$17.9 million cost / \$21.2 billion revenue) for all underground coal mines. Since the estimated compliance cost is below one percent of estimated annual revenue, MSHA concludes no further analysis is required. Compliance with the provisions of the proposed rule would be economically feasible for the coal industry.

V. Regulatory Flexibility Act and Small Business Regulatory Enforcement Fairness Act

Pursuant to the Regulatory Flexibility Act (RFA) of 1980, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA), MSHA has analyzed the compliance cost impact of the proposed rule on small entities. Based on that analysis, MSHA certifies that the proposed rule would not have a significant economic impact on a substantial number of small entities in terms of compliance costs. Therefore, the Agency is not required to develop an initial regulatory flexibility analysis.

The factual basis for this certification is presented in full in Chapter VII of the PREA and in summary form below.

A. Definition of a Small Mine

Under the RFA, in analyzing the impact of a rule on small entities, MSHA must use the Small Business Administration's (SBA's) definition for a small entity, or after consultation with the SBA Office of Advocacy, establish an alternative definition for the mining industry by publishing that definition in the *Federal Register* for notice and comment. MSHA has not established an alternative definition, and is required to use SBA's definition. The

SBA defines a small entity in the mining industry as an establishment with 500 or fewer employees.

MSHA has also examined the impact of the proposed rule on mines with fewer than 20 employees, which MSHA and the mining community have traditionally referred to as small mines. These small mines differ from larger mines not only in the number of employees, but also in economies of scale in material produced, in the type and amount of production equipment, and in supply inventory. Therefore, their costs of complying with MSHA's rules and the impact of the Agency's rules on them will also tend to be different.

This analysis complies with the requirements of the RFA for an analysis of the impact on small entities while continuing MSHA's traditional definition of small mines.

B. Factual Basis for Certification

MSHA's analysis of the economic impact on small entities begins with a screening analysis. The screening compares the estimated costs of the proposed rule for small entities to their estimated revenues. When estimated costs are less than one percent of estimated revenues (for the size categories considered), MSHA believes it is generally appropriate to conclude that no further analysis is required to conclude that there is no significant economic impact on a substantial number of small entities. If estimated costs

are equal to or exceed one percent of revenues, further analysis may be warranted.

Revenue for underground coal mines is derived from data on coal prices and tonnage. The average open market U.S. sales price of underground coal for 2013 was \$60.98 per ton. This average price of underground coal for 2013 is from the Department of Energy (DOE), Energy Information Administration (EIA), *Annual Coal Report 2013*, January 2015, p. 47. The actual 2014 price is not yet available. Based on EIA reports in 2014 and 2015 showing little change in the price for underground coal since 2013, MSHA used the 2013 price of \$60.98 per ton.

Total underground coal production in 2014 was approximately 3.1 million tons for mines with 1-19 employees. Multiplying tons by the 2013 price per ton, 2014 underground coal revenue was \$189 million for mines with 1-19 employees. Total underground coal production in 2014 was approximately 240.1 million short tons for mines with 1-500 employees. Multiplying tons by the 2013 price per ton, 2014 underground coal revenue was \$14.6 billion for mines with 1-500 employees. Total underground coal production in 2014 was approximately 348.4 million tons. Multiplying tons by the 2013 price per ton, total estimated revenue in 2014 for underground coal production was \$21.2 billion.

The estimated yearly cost of the proposed rule for underground coal mines with 1-19 employees is approximately \$1.7 million which represents approximately 0.90 percent of annual revenues. MSHA estimates that some mines might experience costs somewhat higher than the average per mine in their size category while others might experience lower costs.

When applying SBA's definition of a small mine, the estimated yearly cost of the proposed rule for underground coal mines with 1-500 employees is approximately \$13.1 million which represents approximately 0.10 percent of annual revenue.

Based on this analysis, MSHA has determined that no further analysis is required to conclude that the proposed rule would not have a significant economic impact in terms of compliance costs on a substantial number of small underground coal mines, as defined by SBA. MSHA has provided, in the PREA accompanying this proposed rule, a complete analysis of the cost impact on this category of mines.

VI. Paperwork Reduction Act of 1995

A. Summary

The Paperwork Reduction Act (PRA) provides for the Federal government's collection, use, and dissemination of

information. The goals of the PRA include minimizing paperwork and reporting burdens and ensuring the maximum possible utility from the information that is collected (44 U.S.C. 3501). The proposed information collections contained in this proposed rule are submitted for review under the PRA to the Office of Management and Budget (OMB), OMB Control Number 1219-0148. The proposal contains minor adjustments to burden hours for an existing paperwork package with OMB Control Number 1219-0066. MSHA does not include estimated burden hours and the cost of revising training plans on an annual basis because this burden would be accounted for under the OMB Control Number 1219-0009. Underground coal mine operators routinely revise their training plan at least yearly in accordance with 30 CFR part 48.

In the first three years the proposed rule is in effect, the mining community would incur 3,094 annual burden hours with related annual burden costs of approximately \$313,354, and other annual administrative costs (office supplies and postage) related to the information collection package of approximately \$114,565.

B. Procedural Details

The information collection package for this proposed rule has been submitted to OMB for review under 44 U.S.C.

3504, paragraph (h) of the Paperwork Reduction Act of 1995 (PRA), as amended. The methodology for estimating burden hours and related costs are in the Preliminary Regulatory Economic Analysis (PREA) for the proposed rule. The PREA can be accessed electronically at <http://www.msha.gov/REGSINF5.HTM>. For a detailed summary of the burden hours and related costs by provision, see the information collection package accompanying this proposed rule. A copy of the information collection package can be obtained from <http://www.msha.gov/regspwork.htm> or <http://www.regulations.gov> on the day following publication of this document in the *Federal Register* or from the Department of Labor by electronic mail request to Michel Smyth at smyth.michel@dol.gov (e-mail) or (202) 693-4129 (voice) or Sheila McConnell at mcconnell.sheila.a@dol.gov or (202) 693-9440 (voice).

MSHA requests comments to:

- Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the Agency, including whether the information will have practical utility;
- Evaluate the accuracy of the Agency's estimate of the burden of the proposed collection of information,

including the validity of the methodology and assumptions used;

- Enhance the quality, utility, and clarity of the information to be collected; and
- Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses.

Comments on the information collection requirements should be sent to both OMB and MSHA. Addresses for both offices can be found in the ADDRESSES section of this preamble. The Department of Labor notes that, under the PRA, affected parties do not have to comply with the information collection requirements in this proposed rule until they have been approved by the Office of Management and Budget (OMB). The Department of Labor will inform the public of OMB's approval when it is obtained at the final rule stage. MSHA displays the OMB control numbers for the information collection requirements in its regulations in 30 CFR part 3.

The proposed total information collection burden is summarized as follows:

Title of Collection: Permissible Equipment Testing.

- *OMB Control Numbers:* 1219-0066.
- *Affected Public:* Private Sector-Businesses or other for-profits.
- *Estimated Number of Respondents:* 300 respondents.
- *Estimated Number of Responses:* 222 responses.
- *Estimated Annual Burden Hours:* 792 hours.
- *Estimated Annual Cost Related to Burden Hours:* \$80,356.
- *Estimated Other Annual Costs Related to the Information Collection Package:* \$114,565.

Title of Collection: Proximity Detection Systems for Mining Machines in Underground Coal Mines.

- *OMB Control Numbers:* 1219-0148.
- *Affected Public:* Private Sector-Businesses or other for-profits.
- *Estimated Number of Respondents:* 300 respondents.
- *Estimated Number of Responses:* 811,497 responses.
- *Estimated Annual Burden Hours:* 2,302 hours.
- *Estimated Annual Cost Related to Burden Hours:* \$232,998.
- *Estimated Other Annual Costs Related to the Information Collection Package:* \$0.

VII. Other Regulatory Considerations

A. The Unfunded Mandates Reform Act Of 1995

MSHA has reviewed the proposed rule under the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1501 *et seq.*). MSHA has determined that this proposed rule does not include any federal mandate that may result in increased expenditures by State, local, or tribal governments; nor would it increase private sector expenditures by more than \$100 million (adjusted for inflation) in any one year or significantly or uniquely affect small governments. Accordingly, the Unfunded Mandates Reform Act of 1995 requires no further Agency action or analysis. Since the proposed rule does not cost over \$100 million in any one year, the proposed rule is not a major rule under the Unfunded Mandates Reform Act of 1995.

B. Executive Order 13132: Federalism

The proposed rule does not have "federalism implications" because it would not "have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Accordingly, under E.O. 13132, no further Agency action or analysis is required.

C. The Treasury and General Government Appropriations Act of 1999: Assessment of Federal Regulations and Policies on Families

Section 654 of the Treasury and General Government Appropriations Act of 1999 (5 U.S.C. 601 note) requires agencies to assess the impact of Agency action on family well-being. MSHA has determined that the proposed rule would have no effect on family stability or safety, marital commitment, parental rights and authority, or income or poverty of families and children. Accordingly, MSHA certifies that this proposed rule would not impact family well-being.

D. Executive Order 12630: Government Actions and Interference with Constitutionally Protected Property Rights

The proposed rule does not implement a policy with takings implications. Accordingly, under E.O. 12630, no further Agency action or analysis is required.

E. Executive Order 12988: Civil Justice Reform

The proposed rule was written to provide a clear legal standard for affected conduct and was carefully reviewed to eliminate drafting errors and ambiguities, so as to minimize litigation and undue burden on the Federal court system. Accordingly, the proposed rule would meet the applicable

standards provided in section 3 of E.O. 12988, Civil Justice Reform.

F. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks.

The proposed rule would have no adverse impact on children. Accordingly, under E.O. 13045, no further Agency action or analysis is required.

G. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

This proposed rule does not have "tribal implications" because it would not "have substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes." Accordingly, under E.O. 13175, no further Agency action or analysis is required.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

Executive Order 13211 requires agencies to publish a statement of energy effects when a rule has a significant energy action that adversely affects energy supply, distribution or use. MSHA has reviewed this proposed rule for its energy effects because the proposed rule applies to

the underground mining sector. Because this proposed rule would result in annualized costs of approximately \$17.9 million to the underground coal mining industry, relative to annual revenues of \$21.2 billion in 2014, MSHA has concluded that it is not a significant energy action because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Accordingly, under this analysis, no further Agency action or analysis is required.

I. Executive Order 13272: Proper Consideration of Small Entities in Agency Rulemaking

MSHA has thoroughly reviewed the proposed rule to assess and take appropriate account of its potential impact on small businesses, small governmental jurisdictions, and small organizations. MSHA has determined and certified that the proposed rule does not have a significant economic impact on a substantial number of small entities.

VIII. References

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Sanders, M.S., and G.R. Kelly. "Visual Attention Locations for Operating Continuous Miners, Shuttle Cars, and Scoops - Volume 1 (contract J0387213, Canyon Research Group, Inc.)", USBM OFR 29(1)-82, 1981. NTIS PB 82-187964.

U.S. Department of Labor, Mine Safety and Health Administration, "Program Policy Manual, Vol. V - Coal Mines, Criteria - Mantrips," October 2003 (Release V-34), pp. 126 and 127.

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U.S. Department of Labor, Mine Safety and Health Administration, Request for Information. "Proximity Detection Systems for Underground Mines," *Federal Register*, Vol. 75, pg. 2009, February 1, 2010.

U.S. Department of Labor, Mine Safety and Health Administration. "Preliminary Regulatory Economic Analysis for Proximity Detection Systems for Mobile Machines in Underground Mines," Proposed Rule (RIN 1219-AB78), <http://www.msha.gov/prea.HTM>, August 2011.

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List of Subjects in 30 CFR Part 75

Mine safety and health, Reporting and recordkeeping requirements, Underground coal mines.

Joseph A. Main,
Assistant Secretary of Labor for
Mine Safety and Health.

For the reasons set out in the preamble and under the authority of the Federal Mine Safety and Health Act of 1977, as amended, MSHA is proposing to amend chapter I of title 30 of the Code of Federal Regulations as follows:

PART 75—MANDATORY SAFETY STANDARDS—UNDERGROUND COAL MINES

1. The authority citation for part 75 continues to read as follows:

Authority: 30 U.S.C. 811, 813(h), 957.

2. Add § 75.1733 to read as follows:

§ 75.1733 Proximity detection systems; other mobile machines.

(a) *Machines covered.* Operators must equip coal hauling machines and scoops on working sections, except longwall working sections, with machine-mounted components of a proximity detection system in accordance with the following dates. For proximity detection systems with miner-wearable components, the mine operator must provide a miner-wearable component to be worn by each miner on the working sections, except longwall working sections, by the following dates.

(1) Coal hauling machines and scoops manufactured after [INSERT EFFECTIVE DATE OF THE FINAL RULE] must meet the requirements in this section no later than [INSERT DATE 8 MONTHS AFTER THE EFFECTIVE DATE OF THE FINAL RULE]. These

machines must meet the requirements in this section when placed in service with a proximity detection system.

(2) Coal hauling machines or scoops manufactured and equipped with a proximity detection system on or before [INSERT EFFECTIVE DATE OF THE FINAL RULE] must:

(i) Meet the requirements in this section no later than [INSERT DATE 8 MONTHS AFTER THE EFFECTIVE DATE OF THE FINAL RULE] if modifications to the existing proximity detection system can be made underground; or

(ii) Meet the requirement in this section no later than [INSERT DATE 36 MONTHS AFTER THE EFFECTIVE DATE OF THE FINAL RULE] if the existing proximity detection system cannot be modified underground or needs to be replaced with a new proximity detection system.

(3) Coal hauling machines and scoops manufactured and not equipped with a proximity detection system on or before [INSERT EFFECTIVE DATE OF THE FINAL RULE] must meet the requirements in this section no later than [INSERT DATE 36 MONTHS AFTER THE EFFECTIVE DATE OF THE FINAL RULE]. These machines must meet the requirements in this section when placed in service with a proximity detection system.

(b) *Requirements for proximity detection systems.* If a proximity detection system includes miner-wearable components, both the machine-mounted components and miner-

wearable components constitute the proximity detection system. The system must:

(1) Cause a machine to stop before contacting a miner except for a miner who is in the on-board operator's compartment;

(2) Provide warning signals, distinguishable from other signals, that alert miners before the system causes a machine to stop: an audible and visual warning signal on any miner-wearable component and a visual warning signal on the machine;

(3) Provide a visual signal on the machine that indicates the machine-mounted components are functioning properly;

(4) Prevent movement of the machine if any machine-mounted component of the system is not functioning properly. However, a system with any machine-mounted component that is not functioning properly may allow machine movement if an audible or visual warning signal, distinguishable from other signals, is provided during movement. Such movement is permitted only for purposes of relocating the machine from an unsafe location for repair;

(5) Be installed to prevent interference that adversely affects performance of any electrical system; and

(6) Be installed and maintained in proper operating condition by a person trained in the installation and maintenance of the system.

(c) *Proximity detection system checks.* Operators must:

(1) Designate a person who must perform a check of machine-mounted components of the proximity detection system to verify that components are intact and the system is functioning properly, and to take action to correct defects:

(i) At the beginning of each shift when the machine is to be used; or

(ii) Immediately prior to the time the machine is to be operated if not in use at the beginning of a shift; or

(iii) Within 1 hour of a shift change if the shift change occurs without an interruption in production.

(2) Check for proper operation of each miner-wearable component at the beginning of each shift that the component is to be used. Defects must be corrected before the component is used.

(d) *Certifications and records.* The operator must make and retain certifications and records as follows:

(1) At the completion of the check of machine-mounted components required under paragraph (c)(1) of this section, a certified person under § 75.100 must certify by initials, date, and time that the check was conducted. Defects found

as a result of the check in paragraph (c)(1), including corrective actions and dates of corrective actions, must be recorded before the end of the shift;

(2) Make a record of the defects found as a result of the check of miner-wearable components under paragraph (c)(2) of this section, including corrective actions and dates of corrective actions;

(3) Make a record of the persons trained in the installation and maintenance of proximity detection systems required under paragraph (b)(6) of this section;

(4) Maintain records in a secure book or electronically in a secure computer system not susceptible to alteration; and

(5) Retain records for at least one year and make them available for inspection by authorized representatives of the Secretary and representatives of miners.

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